

CLAIMS

1. A yoke which is formed by molding a soft magnetic iron powder and which is used for an electromagnetic actuator, wherein a discontinuous portion for preventing occurrence of eddy current loss is provided.

5

2. The yoke according to claim 1, wherein the discontinuous portion has one or a plurality of notches extended axially from one end surface toward another end surface thereof.

3. The yoke according to claim 2, wherein the discontinuous portion has one or a
10 plurality of notches extended axially from said another end surface to said one end surface.

4. The yoke according to claim 1, wherein the discontinuous portion has one or a plurality of grooves extended axially on an outer side surface and (or) an inner side surface of the yoke.

15

5. The yoke according to claim 1, wherein the yoke is divided circumferentially into a plurality of blocks, the adjacent blocks are connected together with an insulating material sandwiched therebetween, and the connection portion where the insulating material is sandwiched serves as the discontinuous portion.

20

6. The yoke according to any of claims 1 to 5, wherein the yoke is divided axially into a plurality of divisions.

7. An electromagnetic actuator comprising: an outer yoke; an inner yoke that is formed
25 by molding a soft magnetic iron powder and that is so arranged as to face an inside of the outer yoke; a coil portion that is provided at the outer yoke; a permanent magnet that reciprocates in accordance with a magnetic flux generated by the coil portion arranged between the outer yoke and the inner yoke; and a reciprocator that supports the permanent magnet,

30 wherein the yoke according to any one of claims 1 to 5 is adopted as the outer yoke and (or) the inner yoke.

8. An electromagnetic actuator comprising: an outer yoke; an inner yoke that is formed by molding a soft magnetic iron powder and that is so arranged as to face an inside of the outer yoke; a coil portion that is provided at the outer yoke; a permanent magnet that reciprocates in accordance with a magnetic flux generated by the coil portion arranged
5 between the outer yoke and the inner yoke; and a reciprocator that supports the permanent magnet,

wherein the yoke according to claim 6 is adopted as the outer yoke and (or) the inner yoke.

10 9. A Stirling engine comprising: the electromagnetic linear actuator according to claim 7;
a piston connected to the reciprocator; a cylinder that stores the piston, and a displacer that reciprocates with a phase difference from the piston.

10. A Stirling engine comprising: the electromagnetic linear actuator according to claim 8;
15 a piston connected to the reciprocator; a cylinder that stores the piston, and a displacer that reciprocates with a phase difference from the piston.